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OSTROLENK FABER GERB & SOFFEN LLP
1180 AVENUE OF THE AMERICAS
NEW YORK, NY 100368403

EXAMINER	
WHIPKEY, JASON T	
ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 04/22/2004

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/390,264	FUJII, NAOKI	
	Examiner	Art Unit	
	Jason T. Whipkey	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *7-10 and 18-20* is/are withdrawn from consideration.

5)☒ Claim(s) *13 and 14* is/are allowed.

6)☒ Claim(s) *1-6,11,12 and 15-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Restriction

1. Claims 7-10 and 18-20 are withdrawn from further consideration pursuant to 37 C.F.R. § 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

Drawings

2. Corrected drawings were received on February 5, 2004. These drawings are approved and the corresponding objections are withdrawn.

Specification

3. The new title of the invention is approved and the corresponding objection is withdrawn.

4. The new abstract of the disclosure is approved and the corresponding objection is withdrawn.

Response to Arguments

5. Applicant's arguments filed February 5, 2004, have been fully considered but they are not persuasive.

On page 18 of the arguments, Applicant states that, "At least theoretically, the current is not the only parameter that could be utilized to control [motor] speed." Consequently, Applicant asserts that it is not inherent that the rotation speed of a motor is controlled by the amount of current applied.

The examiner is not aware of any way that the rotation speed of the motor shown by Numako could be controlled other than by varying the amount of current applied. Since Numako teaches that the motor moves the lens at varying speeds and no particular structure is disclosed to do so, it is inherent that the motor used in Numako's lens has varying amounts of current applied to it in order to control its speed.

Claim Rejections - 35 U.S.C. § 103

6. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 1 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Wakabayashi (U.S. Patent No. 5,570,149) in view of Numako (U.S. Patent No. 4,962,399) and further in view of Adachi (U.S. Patent No. 4,593,999).

Wakabayashi discloses a camera with a collapsible optical system. Figures 1 and 2 show an optical system 10 located in lens barrel 1 (column 7, lines 8-9). A first lens group 11 is fixed in tube 15 ("a lens frame"), while a second lens group 12 is fixed in lens compartment 14 ("a lens frame") (column 7, lines 11-16). Figure 1 shows optical system 10 in a fully collapsed state ("a position of stowage"), and Figure 2 shows optical system 10 in a photographic state ("a ready-to-image position") (column 7, lines 4-7). The lenses are movable along the optical axis in order to perform varying degrees of zooming ("a zoom interval") (column 7, lines 50-54).

Drive gear 30, shown in Figure 3, moves lens barrel 1 into and out of the collapsible state (column 8, lines 64-65) by drive motor 52, which is shown in Figure 6 (column 13, lines 1-2).

As described in column 8, line 64, through column 9, line 65, drive gear 30 causes the mechanics associated with zoom cam tube 23 to extend from the position shown in Figure 3 to the position shown in Figure 4 without tube 23 rotating ("a first driving mode"). When zoom cam tube 23 rotates from the position shown in Figure 5, zooming is effected ("a second driving mode"). Lens barrel 1 is moved back into the fully collapsed state by reversing the cited procedure (column 9, line 6, through column 10, line 6).

Wakabayashi does not specifically disclose a control means for controlling the optical system. However, it is inherent that the system has some sort of control system in order to be functional and have utility.

Wakabayashi is silent with regard to the amount of current used to operate the drive motor to expand and retract the lens barrel.

Numako discloses a zoom lens driving apparatus similar to the system described by Wakabayashi. The apparatus, as shown in Figure 1, drives a retractable zoom lens (column 3, lines 23-28). The lens moves at a high speed when moving from a retracted position to an operative position but moves at a slower speed when variable zooming is performed (column 1, lines 37-52). It is inherent that the rotation speed of a motor is controlled by the amount of current applied.

As stated in column 19, lines 56-65, an advantage to using various speeds of motor operation is that a lens can be moved from a retracted position in the shortest time possible, thus preventing a photographer from missing a desired shot. For this reason, it would have been obvious to one of ordinary skill at the time of invention to have Wakabayashi's optical system use a higher current when moving a lens into or out of a retracted position.

Wakabayashi is also silent with regard to using a stepping motor to move the lenses, wherein the stepping motor does not have an accompanying encoder.

Adachi discloses a lens driving apparatus, as shown in Figure 2, in which lens 3 is moved by stepping motor 21, wherein no encoder is necessary for operation (column 8, lines 9-11). An advantage to using a stepping motor is that they may be held in an exact position as needed. As stated in column 8, lines 9-11, an advantage to omitting an encoder is that control is simplified. For these reason, it would have been obvious at the time of invention for Wakabayashi to include a stepping motor, wherein the stepping motor lacks an encoder.

8. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakabayashi in view of Numako and further in view of Yasuda (U.S. Patent No. 6,285,154).

Claim 2 may be treated like claim 1. However, Wakabayashi is silent with regard to driving the motor according to a two-phase excitation method in the first driving mode and a single/two-phase excitation (or micro-step) driving method in the second driving mode.

Yasuda discloses a lens controlling apparatus, as shown in Figure 5. Yasuda employs a variety of combinations of excitation methods for driving lens actuator 9. As stated in column 15, lines 41-49, an advantage to using a two-phase excitation is that a lens may be driven to a highly accurate position. Additionally, as stated above, Numako teaches that an advantage to using various speeds of motor operation is that a lens can be moved from a retracted position in the shortest time possible, thus preventing a photographer from missing a desired shot. It therefore would have been obvious to one of ordinary skill in the art at the time of invention to use the two-phase excitation, as described by Yasuda, with the lens driving system disclosed by Wakabayashi, since rapid, accurate removal of a lens from a retracted position helps a photographer obtain a desired shot, as described by Numako.

Additionally, Yasuda teaches that a one-two-phase excitation may be used instead of a two-phase excitation in order to reduce power consumption, since unlike the two-phase excitation method, no current is required to hold the stepping motor at a specific position (column 15, lines 51-61). It therefore would have been obvious to one of ordinary skill in the art at the time of invention to use the one-two-phase excitation, as described by Yasuda, with the lens driving system disclosed by Wakabayashi, since battery power can be conserved while the photographer is waiting for a desired shot.

Regarding claim 11, Official Notice is taken that driving a motor in a two-phase or one-two-phase excitation mode at a higher frequency will result in faster motor operation. As stated above, Numako teaches that an advantage to using various speeds of motor operation is that a lens can be moved from a retracted position in the shortest time possible, thus preventing a photographer from missing a desired shot.

Additionally, operating the motor at a slower rate during a zoom operation allows a user to select a more accurate degree of zooming.

For these reasons, it would have been obvious to one of ordinary skill in the art at the time of invention to operate a stepping motor at a higher frequency when removing a lens from a retracted position than when a user is performing a zooming operation.

9. Claims 3, 5, 6, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakabayashi in view of Numako and further in view of Roustaei (U.S. Patent No. 6,285,154) and Adachi.

Regarding claims 3 and 15, Wakabayashi discloses a camera with a collapsible optical system. Figures 1 and 2 show an optical system 10 located in lens barrel 1 (column 7, lines 8-9). A first lens group 11 is fixed in tube 15 ("a lens frame"), while a second lens group 12 is fixed in lens compartment 14 ("a lens frame") (column 7, lines 11-16). Figure 1 shows optical system 10 in a fully collapsed state ("a position of stowage"), and Figure 2 shows optical system 10 in a photographic state ("a ready-to-image position") (column 7, lines 4-7). The lenses are movable along the optical axis in order to perform varying degrees of zooming ("a zoom interval") (column 7, lines 50-54).

Drive gear 30 ("a conveying means"), shown in Figure 3, moves lens barrel 1 into and out of the collapsible state (column 8, lines 64-65) by drive motor 52 ("a stepping motor"), which is shown in Figure 6 (column 13, lines 1-2).

As described in column 8, line 64, through column 9, line 65, drive gear 30 causes the mechanics associated with zoom cam tube 23 to extend from the position shown in Figure 3 to the position shown in Figure 4 without tube 23 rotating ("a first driving mode"). When zoom cam tube 23 rotates from the position shown in Figure 5, zooming is effected ("a second driving mode"). Lens barrel 1 is moved back into the fully collapsed state by reversing the cited procedure (column 9, line 6, through column 10, line 6).

Wakabayashi does not specifically disclose a control means for controlling the optical system. However, it is inherent that the system has some sort of control system in order to be functional and have utility.

Wakabayashi is silent with regard to the amount of current used to operate the drive motor to expand and retract the lens barrel.

Numako discloses a zoom lens driving apparatus similar to the system described by Wakabayashi. The apparatus, as shown in Figure 1, drives a retractable zoom lens (column 3, lines 23-28). The lens moves at a high speed when moving from a retracted position to an operative position but moves at a slower speed when variable zooming is performed (column 1, lines 37-52). It is inherent that the rotation speed of a motor is controlled by the amount of current applied.

As stated in column 19, lines 56-65, an advantage to using various speeds of motor operation is that a lens can be moved from a retracted position in the shortest time possible, thus

preventing a photographer from missing a desired shot. For this reason, it would have been obvious to one of ordinary skill at the time of invention to have Wakabayashi's optical system operate use a higher current when moving a lens into or out of a retracted position.

Wakabayashi is silent with regard to the specifics of the camera used with his optical system.

Roustaei discloses an optical device for capturing images, as shown in Figure 12A. Lens assembly 18, shown in detail in Figure 1, includes slidable lens support 21 (column 14, lines 18-20). The system may have the zoom capability shown in Figure 41 (column 16, lines 40-43). The system may include a variety of image processing elements (column 27, lines 35-38). Processed image data may be stored in memory buffer 88 ("a recording means"), which is shown in Figure 16 (column 29, lines 15-17).

Since Wakabayashi is silent with regard to the specifics of the camera used with his optical system, it would have been obvious to one of ordinary skill in the art at the time of invention to use any camera, such as the one described by Roustaei.

Wakabayashi is also silent with regard to using a stepping motor to move the lenses, wherein the stepping motor does not have an accompanying encoder.

Adachi discloses a lens driving apparatus, as shown in Figure 2, in which lens 3 is moved by stepping motor 21, wherein no encoder is necessary for operation (column 8, lines 9-11). An advantage to using a stepping motor is that they may be held in an exact position as needed. As stated in column 8, lines 9-11, an advantage to omitting an encoder is that control is simplified. For these reason, it would have been obvious at the time of invention for Wakabayashi to include a stepping motor, wherein the stepping motor lacks an encoder.

Regarding claim 5, Roustaei teaches in column 63, lines 57-59, that power may be removed from a CCD when it is not in use while power continues to be applied to additional components of an imaging system. Since Wakabayashi, as described above, teaches that a lens is not in a valid photo-taking state when it is being moved to or from a collapsed state, it would be advantageous to remove power from the imaging device to which his lens is attached during this time because a reduction in power consumption would occur. For this reason, it would have been obvious to one of ordinary skill in the art at the time of invention for the camera to which Wakabayashi's lens is attached to remove power from the imaging device when it is not as in use, as described by Roustaei.

Regarding claim 6, Numako teaches that his lens moves at a high speed when moving from a retracted position to an operative position but moves at a slower speed when variable zooming is performed (column 1, lines 37-52). It is inherent that the rotation speed of a motor is controlled by the voltage applied.

As stated in column 19, lines 56-65, an advantage to using various speeds of motor operation is that a lens can be moved from a retracted position in the shortest time possible, thus preventing a photographer from missing a desired shot. For this reason, it would have been obvious to one of ordinary skill at the time of invention to have Wakabayashi's optical system operate use a higher voltage when moving a lens into or out of a retracted position.

10. Claims 4, 12, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakabayashi in view of Numako and further in view of Roustaei and Yasuda.

Claims 4 and 16 may be treated like claims 3 and 15, respectively. However, Wakabayashi is silent with regard to driving the motor according to a two-phase excitation method in the first driving mode and a single/two-phase excitation (or micro-step) driving method in the second driving mode.

Yasuda discloses a lens controlling apparatus, as shown in Figure 5. Yasuda employs a variety of combinations of excitation methods for driving lens actuator 9. As stated in column 15, lines 41-49, an advantage to using a two-phase excitation is that a lens may be driven to a highly accurate position. Additionally, as stated above, Numako teaches that an advantage to using various speeds of motor operation is that a lens can be moved from a retracted position in the shortest time possible, thus preventing a photographer from missing a desired shot. It therefore would have been obvious to one of ordinary skill in the art at the time of invention to use the two-phase excitation, as described by Yasuda, with the lens driving system disclosed by Wakabayashi, since rapid, accurate removal of a lens from a retracted position helps a photographer obtain a desired shot, as described by Numako.

Additionally, Yasuda teaches that a one-two-phase excitation may be used instead of a two-phase excitation in order to reduce power consumption, since unlike the two-phase excitation method, no current is required to hold the stepping motor at a specific position (column 15, lines 51-61). It therefore would have been obvious to one of ordinary skill in the art at the time of invention to use the one-two-phase excitation, as described by Yasuda, with the lens driving system disclosed by Wakabayashi, since battery power can be conserved while the photographer is waiting for a desired shot.

Regarding claim 12, Official Notice is taken that driving a motor in a two-phase or one-two-phase excitation mode at a higher frequency will result in faster motor operation. As stated above, Numako teaches that an advantage to using various speeds of motor operation is that a lens can be moved from a retracted position in the shortest time possible, thus preventing a photographer from missing a desired shot.

Additionally, operating the motor at a slower rate during a zoom operation allows a user to select a more accurate degree of zooming.

For these reasons, it would have been obvious to one of ordinary skill in the art at the time of invention to operate a stepping motor at a higher frequency when removing a lens from a retracted position than when a user is performing a zooming operation.

Claim 17 may be treated like claim 15. However, Wakabayashi is silent with regard to driving the motor according to a two-phase excitation method in the first driving mode and a micro-step driving method in the second driving mode.

Yasuda discloses a lens controlling apparatus, as shown in Figure 5. Yasuda employs a variety of combinations of excitation methods for driving lens actuator 9. As stated in column 15, lines 41-49, an advantage to using a two-phase excitation is that a lens may be driven to a highly accurate position. Additionally, as stated above, Numako teaches that an advantage to using various speeds of motor operation is that a lens can be moved from a retracted position in the shortest time possible, thus preventing a photographer from missing a desired shot. It therefore would have been obvious to one of ordinary skill in the art at the time of invention to use the two-phase excitation, as described by Yasuda, with the lens driving system disclosed by

Wakabayashi, since rapid, accurate removal of a lens from a retracted position helps a photographer obtain a desired shot, as described by Numako.

Additionally, Yasuda teaches that a micro-step driving method may be used to control a stepping motor for a lens (column 24, lines 48-49). An advantage to controlling a stepping motor by using a micro-step driving method when controlling a zooming operation is that a micro-step driving method allows a stepping motor to be moved in very small steps, thus increasing zooming accuracy. It therefore would have been obvious to one of ordinary skill in the art at the time of invention to use a micro-step driving method, as described by Yasuda, with the lens driving system disclosed by Wakabayashi.

Allowable Subject Matter

11. Claims 13 and 14 are allowed.

No prior art could be located that teaches or fairly suggests controlling a camera lens via a stepping motor using a two-phase excitation method when the power supply is turned off.

Conclusion

12. Applicant's amendment necessitated the new ground of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is

reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 C.F.R. § 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason T. Whipkey, whose telephone number is (703) 305-1819. The examiner can normally be reached Monday through Friday from 8:30 A.M. to 6:00 P.M. eastern daylight time, alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber, can be reached on (703) 305-4929. The fax phone number for the organization where this application is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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JTW
April 13, 2004

WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600